HOGAN & HARTSON

L.L.P.

ARI Q. FITZGERALD
PARTNER
(202) 637-5423
AQFITZGERALD@HHLAW.COM

COLUMBIA SQUARE
555 THIRTEENTH STREET, NW
WASHINGTON, DC 20004-1109
TEL (202) 637-5600
FAX (202) 637-5910
WWW.HHLAW.COM

March 21, 2006

Ms. Marlene H. Dortch, Secretary
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: WT Docket No. 01-90; ET Docket No. 98-95
Notification of *Ex Parte* Meetings

Dear Ms. Dortch:

Pursuant to Section 1.1206(b) of the Commission's rules, I am writing on behalf of the Alliance of Automobile Manufacturers (the "Alliance") to notify you of *ex parte* meetings that occurred on March 20, 2006 between Alliance representatives and officials at the Commission. Participating in the meeting on behalf of the Alliance were: Rich Deering and Bill Ball, General Motors; Farid Ahmed-Zaid, Ford Motor Company; Bob Barlow, Toyota Motor North America; Nancy Bell, Attorney, Alliance; and the undersigned, Counsel to the Alliance. The Alliance representatives met with Commissioner Deborah Tate and her Legal Advisor, Aaron Goldberger; Barry Ohlson, Senior Legal Advisor to Commissioner Adelstein; John Guisti, Legal Advisor to Commissioner Copps and Fred Campbell, Legal Advisor to Chairman Martin.

During the meeting, the Alliance representatives circulated and reviewed the attached presentation, provided a video demonstration of DSRC applications under development and emphasized why the Commission should designate Channel 172 of the Dedicated Short Range Communications ("DSRC") service for high-availability, low-latency safety communications.

I am filing this notice electronically in the above-referenced docket. In addition, I am sending one copy of this notice to each of the FCC representatives listed below.

Respectfully submitted,

/s/ Ari Q. Fitzgerald

Ari Q. Fitzgerald
Counsel to the Alliance of Automobile Manufacturers

Enclosures

cc: Commissioner Deborah Tate
Aaron Goldberger
Barry Ohlson
John Guisti
Fred Campbell

BGG1

Dedicated Short Range Communications (DSRC)

ET Docket 98-95; WT Docket 01-90

Alliance of Automobile Manufacturers

Presentation to the FCC
March 20, 2006

Alliance OF AUTOMOBILE MANUFACTURERS

Slide 1

BGG1 Green, Beatrice G., 10/26/2005

Alliance Members

BMW Group

DaimlerChrysler

Ford

GM General Motors

mazda

Mitsubishi Motors

Porsche

Volkswagen

Toyota

Alliance of Automobile Manufacturers

Background

Alliance Members:

- Account for over 90% of vehicles sold in the US.
- Employ approximately 600,000 workers at more than 250 facilities in 35 states.

DSRC:

- Will enable first vehicle-to-vehicle interactive safety applications.
- Provides fundamental building block for future active safety applications.
- Specific requirements for active safety applications are under active development.

Alliance OF AUTOMOBILE MANUFACTURERS

DSRC for Safety Projects

- **Vehicle Safety Communication Project (VSC):** Two and half year cooperative program between BMW, DaimlerChrysler, Ford, GM, Nissan, Toyota, VW, and USDOT **(completed Dec. 2004)**
  - Facilitated the advancement of vehicle safety through communication technologies.
  - Identified and evaluated the safety benefits of vehicle safety applications enabled/enhanced by vehicle-to-vehicle communications.
  - Assessed communication requirements, including vehicle-to-vehicle and vehicle-to-infrastructure modes.
  - Contributed to DSRC standards and ensured they effectively support safety.

- **Emergency Electronic Brake Lights (EEBL) Prototyping:** OEM internally funded effort started in June 2005. EEBL will provide the driver of a following vehicle with early notification of a lead vehicle braking hard. This will be especially effective when the driver's visibility is limited because of environmental conditions (e.g., fog, rain, snow) or by objects (e.g., terrain, obstacles, other vehicles) in the driver's field of vision. **(completed Feb. 2006)**

- **Cooperative Intersection Collision Avoidance System (CICAS):** This DSRC-based Project is being planned by USDOT (FHWA) to:
  - Develop and demonstrate cooperative intersection collision avoidance systems
  - Assess the value and acceptance of cooperative collision avoidance systems
  - Develop and provide tools to support industry deployments

  Phase 1 – System Design (Dec. 2007); Phase 2 – Field Testing (Dec 2009)

- **Vehicle-To-Vehicle Communication-Based Safety Applications:** Project being planned by USDOT (NHTSA) as a next project to VSC that will prototype and evaluate vehicle-to-vehicle DSRC-based safety applications, including pre-crash countermeasures such as mitigation by braking, truck-car crash compatibility, etc. **(in the planning stage)**

Alliance OF AUTOMOBILE MANUFACTURERS

Expected Results & Timing from Current Activities

DSRC-based safety applications prototyping will help:

- Establish interoperability of vehicle-to-vehicle safety communications among various OEM vehicles

- Establish & validate communication architecture requirements for vehicle-to-vehicle and vehicle-to-infrastructure safety applications, including OEM standardized usage of Channel 172 for safety applications such as collision warning, mitigation and pre-crash countermeasures.

Safety Applications Enabled by DSRC

Communications Between Vehicle and Infrastructure

- Blind Merge Warning
- **Curve Speed Warning**
- Emergency Vehicle Signal Preemption
- Highway/Rail Collision Warning
- Intersection Collision Warning
- In Vehicle Amber Alert
- In-Vehicle Signage
- Just-In-Time Repair Notification
- **Left Turn Assistant**
- Low Bridge Warning
- Low Parking Structure Warning
- Pedestrian Crossing Information at Intersection
- Road Condition Warning
- Safety Recall Notice
- SOS Services
- **Stop Sign Movement Assistance**
- Stop Sign Violation Warning
- **Traffic Signal Violation Warning**
- Work Zone Warning

Communications Between Vehicles

- Approaching Emergency Vehicle Warning
- Blind Spot Warning
- Cooperative Adaptive Cruise Control
- Cooperative Collision Warning
- **Cooperative Forward Collision Warning**
- Cooperative Vehicle-Highway Automation System
- **Emergency Electronic Brake Lights**
- Highway Merge Assistant
- **Lane Change Warning**
- Post-Crash Warning
- **Pre-Crash Sensing**
- Vehicle-Based Road Condition Warning
- Vehicle-to-Vehicle Road Feature Notification
- Visibility Enhancer
- Wrong Way Driver Warning

Ref: Vehicle Safety Communications Project January 7, 2005 Final Report – DTFH61-01-X-0001

Note: The applications with the highest estimated potential safety benefits are highlighted in bold lettering

Alliance OF AUTOMOBILE MANUFACTURERS

Mobility and Convenience/Productivity Applications Enabled by DSRC

In addition to the safety applications that could be enabled by DSRC, there are a wide range of other applications that may make use of DSRC on a lower-priority basis in real time. Below are some examples of such applications.

- Probe data for mobility (road authority use)
- Traffic/weather information
- Traffic/incident management
- Public fleet management
- Probe-based map building
- Telediagnostics
- Remote reprogramming
- Recall notification
- Service alerts
- Electronic access/payments
- Parking location assistance
- Fleet management
- Commercial vehicle services
- Logistics management (just-in-time delivery)
- Information/entertainment downloads

Ref: National VII Coalition Use Case Database, 2005

V-V Common Safety Message Set

- The preliminary SAE common vehicle-to-vehicle DSRC safety message set includes:
  - Longitude
  - Latitude
  - Height
  - Time
  - Heading Angle
  - Speed
  - Lateral Acceleration
  - Longitudinal Acceleration
  - Yaw Rate
  - Throttle Position
  - Brake Applied Status
  - Brake Applied Pressure
  - Steering Wheel Angle
  - Headlight Status
  - Turn Signal Status
  - Traction Control State
  - Anti-Lock Brake State
  - Vehicle Length / Width
  - Vehicle type/ weight in pre-crash message set

Proceeding Background

ET Docket 98-95; WT Docket 01-90

- **5.850-5.925 GHz band allocated to DSRC in Dec. 1999**
  - DSRC cited as key element in improving safety of nation's highways (FCC 99-305, ¶ 19)
- **Service rules *Report & Order* adopted Dec. 2004** (FCC 03-324)
  - Noted that DSRC is key to achieving DOT's #1 priority of reducing highway fatalities that claim 43,000 deaths annually (¶ 2)
  - Recognized that timeliness and reliability are essential for crash avoidance applications; agreed that non-safety uses would be inappropriate if use resulted in a degradation of safety applications (¶ 15)
  - Nevertheless determined it "premature" to reserve service channels for specific applications; permitted safety/non-safety sharing throughout the band, with channel assignments for each communications request left to be determined by the priority levels of the Control Channel protocol. (¶ 29)
  - Recognized possible need to revisit the channel reservation issue in the future, given early stage of DSRC design (¶ 29)

Alliance OF AUTOMOBILE MANUFACTURERS

Petitions for Reconsideration

- **ARINC and ITS America filed Petitions for Reconsideration in September 2004**
  - ARINC, supported by DOT contract, filed petition in its role as Chair of the ASTM E17.51 DSRC Standards Writing Group
  - Both petitions requested that Channel 172 be designated for high-availability, low-latency vehicle-to-vehicle safety communications, necessary to ensure accident avoidance and mitigation safety goals
  - Supportive comments filed by the Alliance, Sirit Technologies, Raytheon, TransCore, and MarkIV IVHS.
  - ***No oppositions to the petitions were filed***.

Motivation for Petitions

- Concern that some safety applications require very high speed, very reliable and very low latency communications (i.e., Pre-Crash Sensing)

- Given expected high usage of DSRC and Channel Access process in 802.11p, potential exists for excessive delay of critical safety applications

- Dedication of Channel 172 better assures availability for safety applications, and prevents non-safety applications from being deployed on the channel

Alliance OF AUTOMOBILE MANUFACTURERS

Current Situation

- VSC Project studied channel behavior in high traffic environments (*Ref: Vehicle Safety Communications Project January 7, 2005 Final Report – DTFH61-01-X-0001)*

- Concern over capacity and throughput in high traffic environments remains
  - Tests indicate potential for packet loss in complex geometric situations
  - Simulations indicate significant potential for channel crowding and high latency

- Application development and in-situ testing have not yet been completed

Alliance Position on ARINC/DOT Site Registration Manager Proposal

- The Alliance supports the ARINC/USDOT proposal for a Site Registration Manager. Such a mechanism is necessary not only to ensure compliance with DSRC rules, but also to provide efficient use of the band in a complex RSU environment (e.g., busy intersections).

- The Alliance will continue its close collaboration with the USDOT in developing the Site Registration Manager approach.

- However, the Site Registration Manager approach would only help address potential congestion of Channel 172 around an RSU. It would not address channel crowding among OBUs.

Alliance OF AUTOMOBILE MANUFACTURERS

Alliance Position on ARINC/DOT Site Registration Manager Proposal (Continued)

- For OBUs, designation of Channel 172 for high availability, low latency applications is still regarded as the only safeguard for availability of the channel for critical safety applications.

- Furthermore, the Alliance recognizes the need to closely collaborate with the USDOT to establish a mechanism, similar to the Site Registration Manager, to address the allocation of priority levels among all applications using the DSRC band.

Conclusion & Request

- The Commission should designate Channel 172 for high-availability, low latency safety communications without delay, to avoid a future need to relocate non-safety operations that populate the channel.
- The Commission should adopt the ARINC/DOT's Site Registration Manager Proposal.
- The Commission should keep these dockets open until after the final DSRC standard (ASTM/IEEE) and message sets (SAE) are submitted and the public has been allowed to review them and provide comments.

Alliance OF AUTOMOBILE MANUFACTURERS

Appendix

Supporting Information

Designated Channel Needed for Latency-Intolerant Safety Applications

- DSRC stakeholders agree on the need to designate one channel for highest priority, latency-intolerant vehicle safety applications, to ensure an interference-free environment for intensive and critical interactions in emergency situations.
  - DOT has already expressed concern about potential interference in the absence of frequency coordination (Oct. 22, 2004 *ex parte*) and requested that Channel 172 be designated for critical, latency–intolerant vehicle safety applications
  - Alliance, AASHTO, ITS America, ARINC and AIAM all urge the FCC to so designate Channel 172
- Key affected application is vehicle-to-vehicle communications that enable collision avoidance and mitigation (*e.g.*, pretension seat belts, prep airbags).
  - No tolerance for delay – communications needed in the last 500 milliseconds before expected impact
  - Vehicle traveling at 70 MPH moves over 50 feet during this time period
- Setting aside Channel 172 for critical, latency-intolerant vehicle safety applications would better ensure the integrity of such applications than any control channel protocol approach, especially in dense traffic situations.

Alliance OF AUTOMOBILE MANUFACTURERS

Unacceptable Delay Scenario

- With no designated safety channel, collision avoidance and mitigation applications could fail due to delay in communications, as illustrated by the following scenario:
  - Vehicle A calculates a likely collision with vehicle B based on current speed and trajectory.
  - Vehicle A tunes to control channel; after waiting for opportunity to transmit amidst routine status messages from other nearby vehicles, Vehicle A broadcasts instructions that Vehicle B should tune to channel 172 for high priority message.
  - Vehicle A tunes to channel 172, finds multiple low priority transmissions (*e.g.* video downloads) in progress, including "hidden terminal" situation (*i.e.*, a transmitting location that cannot "hear" the priority emergency signal). Vehicle A must wait for its "turn" to transmit.
  - Vehicle A begins transmission, starting with notification of high priority status. At same instant, however, one or more "hidden terminals" begin low priority transmissions. Packets "collide;" no intelligible information received by any of the vehicles.
  - Vehicle A must try transmitting repeatedly until a naturally-occurring blank spot is found. Vehicles A & B need to exchange information regarding vehicle specifics and likely point of impact during approximately the last 500 milliseconds before impact. However, the latency introduced by one or more hidden transmitter situations may be more than several hundred milliseconds in a congested channel, leaving insufficient time to implement impact mitigation techniques.

Designation Needed Before Non-Safety Operations Become Entrenched

- *R&O* imposes no limit on the number of non-exclusive geographic roadside units (RSU) licenses granted. Each license permits use of all service channels. (¶¶ 57-58)
- It is contemplated that commercial and other services (provided via RSUs) will select a particular channel on which to operate, which could be Channel 172 in some locations. Thus, it will not be possible for control channel protocol to guarantee a uniform assignment of safety applications to an always-available channel.
- Without preserving Channel 172 for high availability and low latency communications, next generation critical safety applications could be precluded because all channels could become occupied by other services before these new safety applications are deployed.
  - Although these vehicle safety applications are several years off, it is not "premature" to designate the channel now, *before incumbent non-safety operations become entrenched*.

R&O Creates Uncertainty; Deters Introduction of DSRC Safety Applications

- Typical automotive design development cycles normally take 5-6 years, esp. for new electronic technology (*e.g.*, DSRC) to be incorporated into vehicle electrical systems across all model lines of a vehicle manufacturer (OEM).
- OEMs need to know *today* the status of spectrum availability several years in the future.
- Deferred consideration of the designation of a specific channel for latency–intolerant safety applications will create uncertainty among OEMs and potentially deter or delay the incorporation of DSRC safety devices in new vehicles.

Alliance OF AUTOMOBILE MANUFACTURERS